PENDING CLAIMS

1. (Twice Amended) A high power output vacuum electron device comprising:

a cathode for emitting a supply of electrons,

an anode for attracting said electrons, said anode having a configuration to allow said electrons to pass through said anode,

an RF generator circuit in the path of said electron beam for generating RF signal energy in the presence of a high-voltage power source,

B2 a magnet including a magnet pole piece surrounding said anode and said RF generation circuit for focusing said electrons into a collimated beam, and

a collector for receiving the collimated electron beam and for returning the electrons to the cathode, said collector is a multi-stage depressed collector which is shielded from the magnetic field from said magnet,

wherein said magnet includes no magnet pole piece in vicinity of a region of said collector, a magnetic material surrounding the collector region being disposed such that substantially no magnetic field reversal is present at the collector region.

2. (Twice Amended) The vacuum electron device of Claim 1 wherein said collector is defined by a region which is free of any magnetic fields such that the electron beam naturally disperses to evenly deposit said electrons on inner walls of said collector, said collector being thereby free of hot spots due to uneven electron deposition thereon.

3. (Unamended) The vacuum electron device of Claim 1 wherein said collector is free of magnetic flux reversals from said magnet such that the electron beam evenly disperses on said collector.

4. (Twice Amended) A vacuum electron device including a source of electrons, said electrons being configured into a narrow beam, and a multi-stage depressed collector for collecting said electrons, the improvement comprising:

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a magnet arrangement surrounding and focusing said narrow beam, the magnetic flux of said magnet arrangement being parallel to and collinear with the centerline of said electron beam, said magnet arrangement having a first open pole piece adjacent to the area of said source of electrons to initially focus said electron beam, and a second open pole piece along said centerline to focus and drive said electron beam, said magnet having no open magnet pole piece in the vicinity of said multi-stage depressed collector so that any magnetic flux from the magnet is directed back into the body of said magnet, and

a magnetic material surrounding the collector region such that substantially no magnetic field reversal is present at the collector region.

5. (Once Amended) The vacuum electron device of Claim 4 wherein said multi-stage

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depressed collector includes an internal chamber, said electrons evenly dispersing within said internal chamber thereby eliminating any hot spots due to magnetically focused electrons.

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6. (Once Amended) The vacuum electron device of Claim 5 wherein each of said stages is connected to a different high-voltage supply such that electrons of different kinetic energies will impinge on the associated depressed collector.

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7. (Twice Amended) A gun only magnet utilized in a multi-stage depressed collector high-energy vacuum electron device comprising:

a first pole piece region generating magnetic flux adjacent a cathode of said vacuum electron device to drive and initially focus electrons emitted from said cathode,

a second pole piece region providing magnetic flux along the path of electrons to focus said electrons into a narrow beam, said magnet having no pole magnet piece in the region of said vacuum electron device where the electrons are collected and returned to said cathode, and

a magnetic material surrounding the collector region such that substantially no magnetic field reversal is present at the collector region.

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8. (New) The vacuum electron device of Claim 1 wherein the magnetic field includes a refocusing region in vicinity of an entrance to said collector region.

9. (New) The vacuum electron device of Claim 4 wherein said magnet arrangement further generates a refocusing magnetic field in vicinity of an entrance to said collector region.